

## SAFETY INSTRUCTIONS

**CAUTION:** To reduce the risk of electric shock, do not remove the cover (or back). No user serviceable parts inside; refer servicing to qualified personnel.



**WARNING:** To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure—voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual.

### DETAILED SAFETY INSTRUCTIONS:

All the safety and operation instructions should be read before the appliance is operated.

#### **Retain Instructions:**

The safety and operating instructions should be retained for future reference.

#### **Heed Warnings:**

All warnings on the appliance and in the operating instructions should be adhered to.

#### **Follow instructions:**

All operation and user instructions should be followed.

#### **Water and Moisture:**

The appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool etc.).

#### **Ventilation:**

The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

#### **Heat:**

The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

#### **Power Source:**

The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

#### **Grounding or Polarization:**

Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

#### **Power-Cord Protection:**

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles and the point where they exit from the appliance.

#### **Cleaning:**

The appliance should be cleaned only as recommended by the manufacturer.

#### **Non-use Periods:**

The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

#### **Debris and Liquid Entry:**

Care should be taken that debris and/or liquids do not enter the enclosure through openings.

#### **Damage Requiring Service:**

The appliance should be serviced by qualified service personnel when:

- The power supply cord or the plug has been damaged; or
- Debris or liquid has entered the appliance; or
- The appliance has been exposed to rain; or
- The appliance does not appear to operate normally or exhibits a marked change in performance; or
- The appliance has been dropped, or the enclosure damaged.

#### **Servicing:**

The user should not attempt to service the appliance beyond that which is described in the operating instructions. All other servicing should be referred to qualified service personnel.

## FOREWORD

Dear Customer,

Welcome to the team of POWERPLAY PRO users and many thanks for the confidence that you have shown in us by purchasing the HA4600. It is one of my most pleasant tasks to write this letter to you, because after many months of hard work our engineers have achieved a very ambitious goal: the presentation of an outstanding piece of equipment, which thanks to its flexibility can be used both in studios and by in live sound applications. The task of developing our new POWERPLAY PRO has meant a great deal of responsibility. As we continued to develop it further, you—the discerning end-user and musician—were always at the forefront of our thoughts. Meeting this responsibility also involved us in considerable effort and late-night working, but it was fun, too. This type of development always brings together a large number of people, and it is a great feeling when all those involved can be proud of the results of their work.

Our philosophy is that you should also share in this satisfaction. You are the most important member of our team. With your highly competent encouragement and suggestions for new products, you have greatly contributed to shaping our company and to making it successful. In return we guarantee you an uncompromising level of quality (manufactured under ISO9000 certified management system), excellent technical and audio characteristics and an extremely favorable price. All this makes it possible for you to develop your fullest potential, without being hampered by budget constraints.

We are often asked how we manage to manufacture equipment of this quality at such unbelievably low prices. The answer is very simple: You make it possible! Many satisfied customers means large sales volumes. Large sales volumes means we can get better purchase prices for components etc. Isn't it only fair for us to pass this benefit back to you? After all, we know that your success is our success, too!

I would like to thank everyone who has helped make the POWERPLAY PRO possible. All have made their own personal contribution, beginning with the developers, through the many employees of our company and up to you, the user of BEHRINGER products.

My friends, it's been worth the trouble!

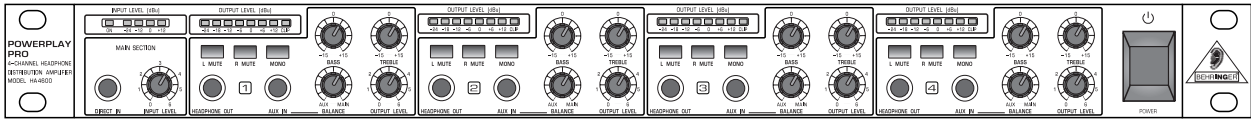
Thank you very much,

A handwritten signature in black ink, appearing to read 'U. Behringer', with a long horizontal flourish extending to the right.

Uli Behringer

# POWERPLAY PRO®

Professional multi-purpose headphone amplifier system for stage and studio applications



- ▲ Four totally independent high-power stereo amplifiers in one rack space
- ▲ Four independent input/aux sections provide up to four stereo mixes
- ▲ Stereo aux input for each channel allows you to mix in any additional instrument or sound source
- ▲ Ultra-musical 2-band EQ per channel for effective sound adaptation
- ▲ Highest sonic quality even at maximum volume
- ▲ Output level control per channel
- ▲ Mono / stereo switch per channel for more flexibility
- ▲ Left & right mute switches per channel allow two different mixes in mono mode
- ▲ One front and two rear output's 1/4" TRS per channel
- ▲ Accurate 8-digit LED output meter per channel
- ▲ Front panel direct input connector for easy connection of any source
- ▲ Paralleled main outputs allow cascading of several headphone amplifiers
- ▲ Servo-balanced, gold-plated XLR and 1/4" TRS inputs and outputs
- ▲ Ultra low-noise 4580 operational amplifiers for outstanding audio performance
- ▲ High-quality detented ALPS potentiometers and illuminated switches
- ▲ High-quality components and exceptionally rugged construction for long life and durability
- ▲ Shielded toroidal power transformer for minimal noise interference
- ▲ Manufactured under the ISO9000 certified management system

HA4600

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## 1. INTRODUCTION

In purchasing the BEHRINGER POWERPLAY PRO HA4600 you have acquired a headphone amplifier of the high end-class. The equipment was developed for the most demanding uses: professional recording, radio and TV studios, CD and digital production equipment etc. Its extensive capabilities make the POWERPLAY PRO universally applicable. It was developed for use both as a reference unit, to assess the quality of a final mix, and as a distribution amplifier for the comfortable addition of playbacks in studio use.

The POWERPLAY PRO has a range of switching possibilities and a sound performance, which are found in few headphone amplifiers. Besides its extremely powerful amplifiers the HA4600 also has an ingenious signal-source distribution system.

Improving on the well-known POWERPLAY PRO unit was a big challenge. We are proud that we have been able to develop further the innovations we introduced in the preceding models and to have developed an even more high-value headphone amplifier, which can meet professional expectations in every type of application. The HA4600 includes for example bass and high-EQ in each channel, making possible an even more individualized audio setup. An 8-segment LED display gives you exact information on the performance of each channel and makes it possible to control the level precisely, at any time.

 **This manual first describes the terminology used, so that you can fully understand the POWERPLAY PRO and its functions. Please read the manual carefully and keep it for future reference.**

### 1.1 Before you begin

The POWERPLAY PRO was carefully packed in the factory, in order to ensure safe transport. Nevertheless, should the box show signs of damage please check the equipment itself immediately for any signs of external damage.

Please also take the time to complete and return the warranty card within 14 days of the date of purchase, otherwise you will lose the right to the extended warranty. Or simply use our online registration under [www.behringer.com](http://www.behringer.com).

- ☞ **If the unit is damaged, please do not return it to us, but notify your dealer and the shipping company immediately, otherwise claims for damage or replacement may not be granted. Shipping claims must be made by the consignee.**

Be sure that there is enough space around the unit for cooling and please do not place the POWERPLAY PRO on high-temperature devices such as power amplifiers, etc. to avoid overheating.

- ☞ **Before connecting the POWERPLAY PRO to the mains, please carefully check that your equipment is set to the correct supply voltage!**

The fuse holder on the female mains connector has 3 triangular markings. Two of these triangles are opposite each other. The HA4600 is set to the operating voltage shown next to these markings. It can be set to another voltage by turning the fuse holder through 180°. **CAUTION: this does not apply to export models, which were designed e.g. only for a mains voltage of 115 V!**

Connection to the mains is made by means of a mains cable with an IEC receptacle which complies with the appropriate safety regulations.

- ☞ **Please note that all units must be grounded properly. For your own safety, you should never remove any ground connectors from electrical devices or power cords or render them inoperative.**

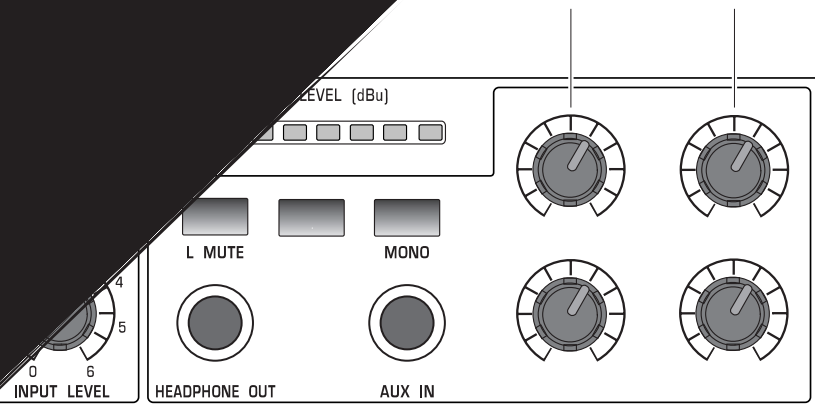
### WARNING!

- ☞ **It should be pointed out, that extreme output volumes may damage your ears and/or your headphones. Turn down all LEVEL controls before you switch on the unit. Always pay attention to an appropriate volume.**

## 2. CONTROL ELEMENTS

The BEHRINGER POWERPLAY PRO has four identical channels. Each channel has three illuminated push-button switches, four rotary controls, two jacks and eight LEDs. The common main section has one control, one jack and five LEDs.

### 2.1 The front panel control elements





### 3. APPLICATIONS

#### 3.1 Using the MAIN inputs

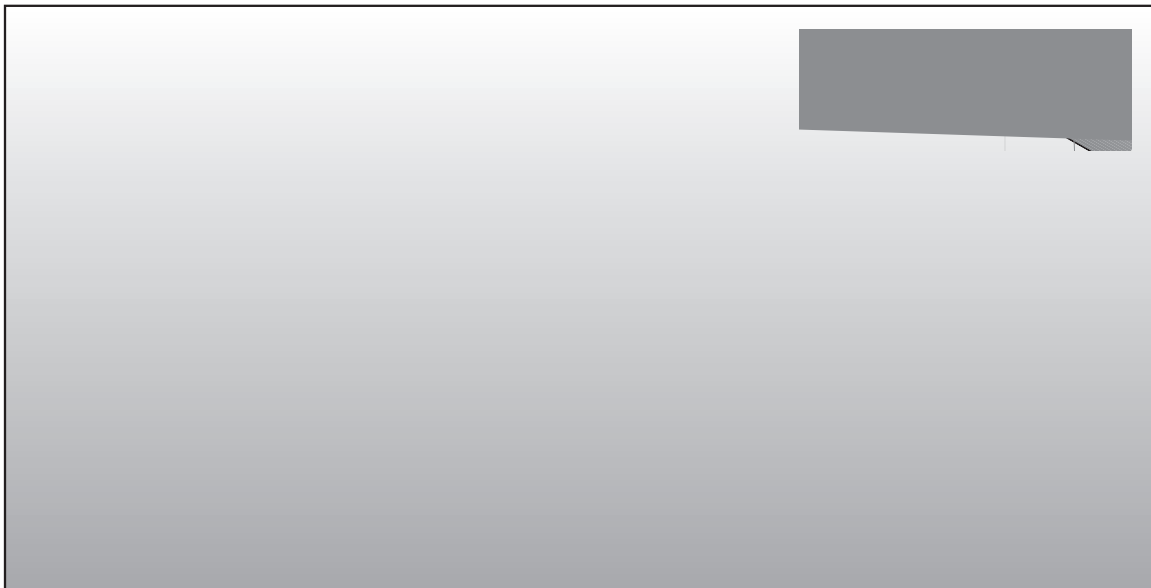
Connect a program source to the rear panel MAIN inputs and connect the headphone cable with one of the POWERPLAY PRO outputs. Turn the INPUT LEVEL and the BALANCE controls to their central positions. The INPUT LEVEL control is used to increase or decrease together the volume of all the headphones which are being controlled via the MAIN inputs. The individual OUTPUT LEVEL controls are only used to adjust the desired channel volume.

#### 3.2 Using the AUX IN inputs

The AUX IN inputs are basically used to mix in an additional input signal with the master signal, while the corresponding BALANCE control adjusts the volume ratio between the two signals. The Aux function replaces the monitor mixer which was necessary up to now, and so allows for a type of use which occurs frequently in practice.

Suppose e.g. that a singer has to add a vocal track to an existing playback. Up till now it was usual for the singer to listen to the playback by pressing a headphone pad against one ear, while using the other ear to control his/her own voice. With the POWERPLAY PRO this application becomes much simpler and much more comfortable. The playback signal is played in via the MAIN IN inputs and the pre-amplified vocal signal added via the AUX connector. The associated BALANCE control is adjusted so that the singer hears a perfect sound volume mix of both the playback and the vocals, with the OUTPUT LEVEL control determining the overall volume level.

The four independent channels permit the separate recording and mixing for four musicians. Should this not be enough, you can interface and link as many POWERPLAY PRO machines as desired using the MAIN OUT outputs.





POWERPLAY PRO with the appropriate monitor-, subgroup or single outputs from the mixing console. Please note that the AUX inputs are set up for stereo. To play in a stereo signal you will need a stereo jack. If you use a mono jack it is advisable to activate the MONO switch, so as to get a signal distribution over both halves of the headphone.

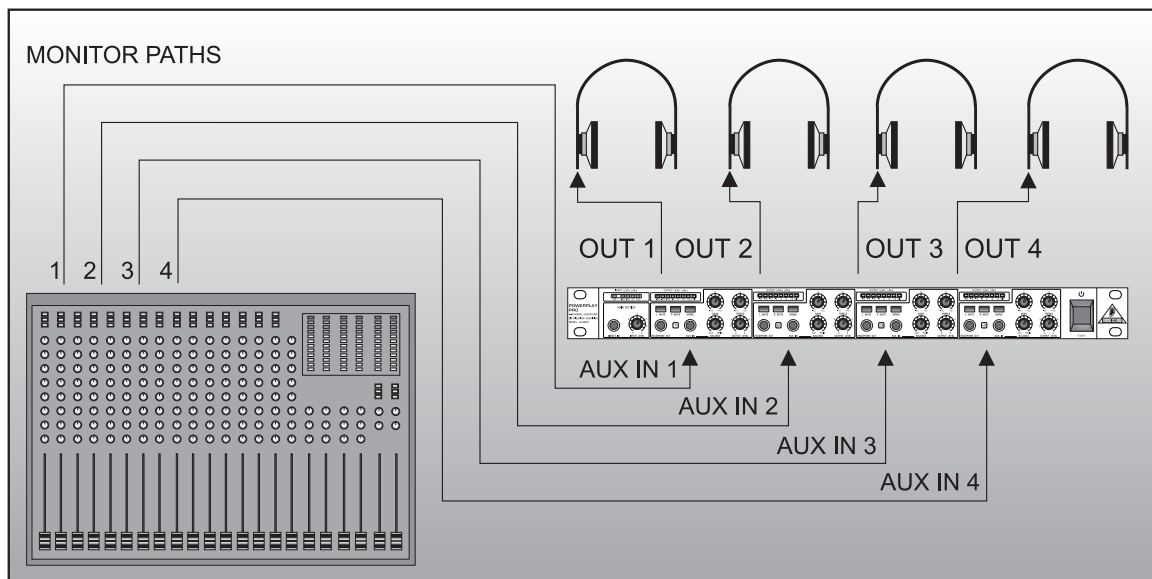


Fig. 3.2: Example of a monitor recording in stage use

### 3.3 Using the DIRECT IN input

The DIRECT IN socket is situated on the left side of the front panel. It is often necessary e.g. to replay a piece of music to the musicians in the studio via a DAT recorder. This can be done simply and easily using the DIRECT IN socket. Use of this input automatically blocks the signal set up over the MAIN IN socket.

### 3.4 Using the MONO function

For some monitor applications, especially in live operation, a stereo program can often sound irritating. This negative effect becomes particularly clear if the two channels show a large channel separation, i.e. they have different information content, linked with significantly different impressions of sound volume. The MONO switch permits mono operation, that is, the linked operation of the left and right channels without having to use a "Y" adaptor or a special cable.

### 3.5 Using the MUTE function

If the MONO switch is in the depressed position, the unit works in mono operation. Pressing one of the two MUTE switches mutes the corresponding input signal (left or right input) and the non-muted signal can then be heard over BOTH (left and right) headphone outputs. This routing option means that you can set up two different programs via the left and right inputs and make just the one or the other audible as desired.


The Mute function is particularly useful if playback is to be combined with the simultaneous recording of a vocal track. Whereas before it was necessary for a singer to hold one headphone pad away from his/her ear during a music recording in order to hear his own voice better, with the HA4600 the playback can now be switched to stereo mode and the unused channel switched to mute. The previous normal—and uncomfortable—practice of moving one headphone pad away from the ear is now a thing of the past.

### 3.6 Connecting several headphones

All four stereo amplifiers have three headphone output sockets on both the front and rear panels. This means that several headphones can be connected via each amplifier at the same time, provided that the minimum connection impedance of the amplifier does not drop below 100 Ohm. Since the amplifiers are resistant to temporary short circuits, no damage will occur if the level drops below this impedance, but it can lead to a loss of quality in the form of distortion and reduced performance.

## 4. AUDIO CONNECTIONS

As a standard, the BEHRINGER POWERPLAY PRO is equipped with electronically servo-balanced inputs and outputs. The circuit design features automatic hum suppression for balanced signals and so ensures trouble-free operation, even at the highest operating levels. Externally induced mains hum, etc. can therefore be effectively suppressed. The automatic servo-function recognizes the presence of unbalanced connectors and adjusts the nominal level internally to avoid level differences between the input and output signals (6-dB correction).

 Please ensure that only qualified persons install and operate the POWERPLAY PRO. During installation and operation the user must have sufficient electrical contact to earth. Electrostatic charges might affect the operation of the unit.

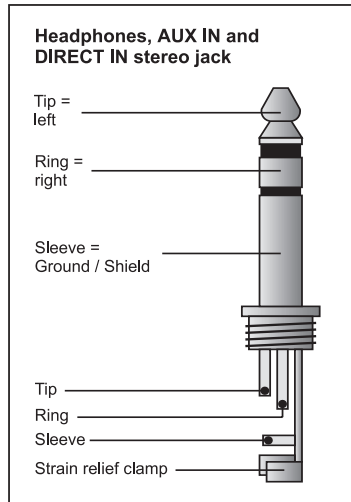
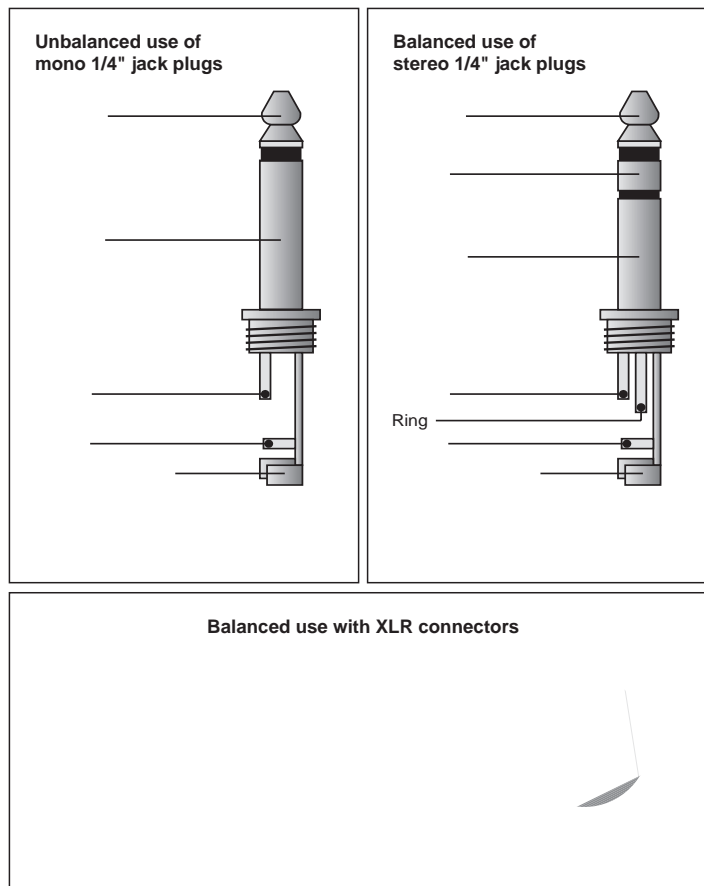


Fig. 4.1: Connector for the headphones, AUX IN and DIRECT IN



## 5. SPECIFICATIONS

### AUDIO INPUTS

#### MAIN-Input

Connectors	XLR- and 1/4" TRS
Type	HF-filtered, servo-balanced input
Impedance	40 kOhm balanced, 20 kOhm unbalanced
Max. input level	+21 dBu balanced and unbalanced
CMRR	typically 40 dB, >55 dB @ 1 kHz

#### AUX IN- and DIRECT IN-Input

Connectors	1/4" TRS (tip = left, ring = right, sleeve = ground)
Type	unbalanced
Impedance	>15 kOhm unbalanced
Max. input level	+21 dBu unbalanced
CMRR	typically 40 dB, >50 dB @ 1 kHz

### AUDIO OUTPUTS

Connectors	XLR- and 1/4" TRS
Type	balanced / unbalanced
Impedance	depends on the input impedance
Max. output level	+21 dBu balanced and unbalanced

### SYSTEM SPECIFICATIONS

Frequency response	10 Hz to 100 kHz, +/-3 dB
Noise	>99 dBu, unweighted, 22 Hz to 22 kHz (>95 dB @ +4dBu)
Distortion (THD)	0.005 % typ. @ +4 dBu, 1 kHz, Gain 1

### POWER AMPLIFIER

Max. output power	+26 dBm
Min. output impedance	100 Ohm

### FUNCTION CONTROLS

Input level	variable
Balance per channel	Mix between Aux and Main signals
Output level per channel	variable

### FUNCTION SWITCHES

Left mute	mutes the left signal of the respective channel
Right mute	mutes the right signal of the respective channel
Mono	switches this channel to mono

### DISPLAYS

Input level	4-digit LED-display: -24/-12/0/+12 dBu
Output level	8-digit LED-display: -24/-18/-12/-6/0/+6/+12 dBu/CLIP

### POWER SUPPLY

Mains voltage	USA/Canada	120 V ~, 60 Hz
	U.K./Australia	240 V ~, 50 Hz
	Europe	230 V ~, 50 Hz
	general export model	100 - 120 V ~, 200 - 240 V ~, 50 - 60 Hz
Power consumption	40 W	
Fuses	100 - 120 V ~:	T 630 mA H
	200 - 240 V ~:	T 315 mA H
Mains connection	standard IEC receptacle	

### DIMENSIONS AND WEIGHT

Dimensions	approx. 1 3/4" (44.5 mm) * 19" (482.6 mm) * 8 1/2" (217 mm)
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## 6. WARRANTY

### § 1 WARRANTY CARD/ONLINE REGISTRATION

To be protected by the extended warranty, the buyer must complete and return the enclosed warranty card within 14 days of the date of purchase to BEHRINGER Spezielle Studiotechnik GmbH, in accordance with the conditions stipulated in § 3. Failure to return the card in due time (date as per postmark) will void any extended warranty claims.

Based on the conditions herein, the buyer may also choose to use the online registration option via the Internet ([www.behringer.com](http://www.behringer.com) or [www.behringer.de](http://www.behringer.de)).

### § 2 WARRANTY

1. BEHRINGER (BEHRINGER Spezielle Studiotechnik GmbH including all BEHRINGER subsidiaries listed on the enclosed page, except BEHRINGER Japan) warrants the mechanical and electronic components of this product to be free of defects in material and workmanship for a period of one (1) year from the original date of purchase, in accordance with the warranty regulations described below. If the product shows any defects within the specified warranty period that are not due to normal wear and tear and/or improper handling by the user, BEHRINGER shall, at its sole discretion, either repair or replace the product.

2. If the warranty claim proves to be justified, the product will be returned to the user freight prepaid.

3. Warranty claims other than those indicated above are expressly excluded.

### § 3 RETURN AUTHORIZATION NUMBER

1. To obtain warranty service, the buyer (or his authorized dealer) must call BEHRINGER (see enclosed list) during normal business hours **BEFORE** returning the product. All inquiries must be accompanied by a description of the problem. BEHRINGER will then issue a return authorization number.

2. Subsequently, the product must be returned in its original shipping carton, together with the return authorization number to the address indicated by BEHRINGER.

3. Shipments without freight prepaid will not be accepted.

### § 4 WARRANTY REGULATIONS

1. Warranty services will be furnished only if the product is accompanied by a copy of the original retail dealer's invoice. Any product deemed eligible for repair or replacement by BEHRINGER under the terms of this warranty will be repaired or replaced within 30 days of receipt of the product at BEHRINGER.

2. If the product needs to be modified or adapted in order to comply with applicable technical or safety standards on a national or local level, in any country which is not the country for which the product was originally developed and manufactured, this modification/adaptation shall not be considered a defect in materials or workmanship. The warranty does not cover any such modification/adaptation, irrespective of whether it was carried out properly or not. Under the terms of this warranty, BEHRINGER shall not be held responsible for any cost resulting from such a modification/adaptation.

3. Free inspections and maintenance/repair work are expressly excluded from this warranty, in particular, if caused by improper handling of the product by the user.

This also applies to defects caused by normal wear and tear, in particular, of faders, potentiometers, keys/buttons and similar parts.

4. Damages/defects caused by the following conditions are not covered by this warranty:

- ▲ misuse, neglect or failure to operate the unit in compliance with the instructions given in BEHRINGER user or service manuals.

- ▲ connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used.

- ▲ damages/defects caused by force majeure or any other condition that is beyond the control of BEHRINGER.

5. Any repair or opening of the unit carried out by unauthorized personnel (user included) will void the warranty.

6. If an inspection of the product by BEHRINGER shows that the defect in question is not covered by the warranty, the inspection costs are payable by the customer.

7. Products which do not meet the terms of this warranty will be repaired exclusively at the buyer's expense. BEHRINGER will inform the buyer of any such circumstance. If the buyer fails to submit a written repair order within 6 weeks after notification, BEHRINGER will return the unit C.O.D. with a separate invoice for freight and packing. Such costs will also be invoiced separately when the buyer has sent in a written repair order.

### § 5 WARRANTY TRANSFERABILITY

This warranty is extended exclusively to the original buyer (customer of retail dealer) and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, etc.) shall be entitled to give any warranty promise on behalf of BEHRINGER.

### § 6 CLAIM FOR DAMAGES

Failure of BEHRINGER to provide proper warranty service shall not entitle the buyer to claim (consequential) damages. In no event shall the liability of BEHRINGER exceed the invoiced value of the product.

### § 7 OTHER WARRANTY RIGHTS AND NATIONAL LAW

1. This warranty does not exclude or limit the buyer's statutory rights provided by national law, in particular, any such rights against the seller that arise from a legally effective purchase contract.

2. The warranty regulations mentioned herein are applicable unless they constitute an infringement of national warranty law.

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